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ABSTRACT

An understanding of the writing problems and personalities of some of the technically oriented students at Michigan Technological University may help others who teach similar students. Although their scores on aptitude tests are high, these students have had very little experience in writing. In addition, the majority of the students have had very little experience or interest in reading. Many have read only required school texts, popular magazines, newspaper features, or comic books. Therefore, when they are asked to read the relatively sophisticated literature selections used to stimulate writing in freshman composition classes, they are often unable to understand or interpret the material. Many of the students also tend to be naive and unsophisticated, rigid and literal in their thinking, or uncommunicative and inarticulate. Politically conservative, they seldom question the status quo and are accepting of the conventional wisdom and established authority. Students also misinterpret the meanings of words because they have never seen them in written form. Another problem is their literal interpretation of assignments. In spite of these problems, however, the students are also logical, hardworking, conscientious, and eager to succeed, and, therefore, receptive to instruction. (HOD)

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SOME CHARACTERISTICS AND WRITING PROBLEMS OF TECHNICALLY ORIENTED STUDENTS

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The purpose of this session of the 1984 Conference on College Composition and Communication is to describe some characteristics and reading and writing problems of technically-oriented students and to discuss various techniques for dealing with their problems. Participants in this session are on the staff of the Language Skills Laboratory at Michigan Technological University.

Michigan Technological University (MTU) is located in the city of Houghton in the northwestern part of the Upper Peninsula of Michigan. It offers undergraduate degrees in nine engineering fields, the natural sciences, social science, humanities, business administration, forestry, medical technology, mathematics, and computer science. The graduate school offers master's degree programs in seventeen of these fields and doctoral programs in five.

The great majority of people attending MTU are technically-oriented students. That is, students who have selected a scientific or technological field as their college major. For example, in the fall of 1983, of 1,253 entering freshmen, 92% were enrolled in technical curricula such as engineering (68%), technology (10%), mathematics or computer science (10%), and natural science (6%). The remaining 6% were studying non-technical subjects. Of the 7,640 students enrolled at MTU in the fall of 1983, 5,860 were male and 1,780 were female.

As a service to students at MTU the Humanities Department maintains a

Language Skills Laboratory where tutors are available for instruction in basic skills in reading, writing, and speaking the English language. The students enrolled in the Language Skills Lab reflect the gender pattern of the university as a whole and are also primarily technically-oriented. For example, in the fall of 1983, of 98 Lab students who completed an end-of-term Lab evaluation form, 62% were engineering students, 26% were in other technical or scientific programs, and 5% were in non-technical fields. (The remaining 7% didn't specify their programs.) With such a large number of students in technical fields, this group provides a good population to illustrate some of the typical characteristics and writing problems of technically-oriented students.

The most obvious difference between technically-oriented and other students is in their academic aptitudes. As might be expected, many technically-oriented students do better than other students on the mathematics and natural science sections of college entrance examinations. For example, students who enrolled at MTU in the fall of 1983, had mean American College Test (ACT) scores of 26.7 in mathematics and 20.8 in English, while the national means for all college bound studens on the ACT were 16.9 in math and 17.8 in English. In fact, MTU students scored higher in math than any other category except natural science (27.0), but, nationally, on the average, college bound students scored the highest in English and the lowest in math. The average composite score for MTU students entering college in 1983 was 24.6 which compares favorably to the score of 18.7 for all students.

American College Test (ACT) Scores

	MATH	ENGLISH	COMPOSITE
MTU STUDENTS	26.7	20.8	24.6
ALL STUDENTS	16.9	17.8	18.3

TABLE I

In addition to academic aptitude, there are several other characteristics which have been attributed to those who are technically-oriented. Investigators studying this issue have found that such people (usually studied as groups of engineers or engineering students) were:

- likely to have a lower score on the Maudsley Personality Inventory's neuroticism scale than people interested in the social sciences (1);
- less likely to change their majors in college (2);
- less likely to join radical student groups (3);
- ambitious, preocupied with success and status, and from lower socioeconomic backgrounds than most university students (4);
- higher scoring than all other students except physical science majors on a general intelligence test (5); and,
- likely to rate higher in self-control, masculinity and tension and lower in artistic interest and imaginitiveness (6).

Other investigators have found that people with different vocational interests have different ability patterns (7).

Sidney Wilcox (8) suggests that engineering students who are poor writers will learn to write well only when, and if, they are convinced that writing skills will be important to their future success on the job. Then, he says, these students learn quickly and well. Wilcox also says that writing instruction for these students is more successful if it emphasizes the basic principles of grammar and is based on an analysis of the structures of the language, much as suggested by Richard Lanham in describing his "Paramedic Method." (9) These approaches to writing instruction, of course, ignore the basic rationale for teaching humanities to technically oriented students—that technicians, engineers, and scientists must become broadly educated, concerned, and aware citizens.

This broader approach to writing instruction is used in the freshman composition classes at MTU which most Language Lab students are taking. In their weekly lab sessions these students receive intensive, one-to-one instruction in writing skils from professional tutors. Because of the close relationships developed in this setting, tutors are familiar with the students' academic and personal characteristics and their writing problems.

Our students maintain a difficult course of study throughout their years at MTU. Aside from English composition, the typical Lab student takes courses in chemistry, biology or physics; mathematics; computer science; economics; and engineering. While considerable reading skill is required to do well in these courses, many students do little writing except in their English classes despite an active Writing-Across-the-Curriculum program.

Similarly, during their high school years, most lab students have had very little writing experience. Not only have they written fewer essays,

themes, reports, and especially, poems, than most students, but they also tend to write fewer letters, notes, lists, and other such forms of informal written communiation. Even graffiti seem to be less evident at MTU than at many other campuses. This lack of writing experiences is probably the most important contributor to many Language Lab students' poor organizational and mechanical writing skills.

In addition, the majority of our students have very little experience or interest in reading. Many have read only required school texts, popular magazines, newspaper features, and comic books. Therefore, when they are asked to read the relatively sophisticated literature selections used to stimulate writing in freshman composition classes, they are often unable to understand or interpret the material. Resulting are many unfocused, undeveloped, and immature compositions.

There are several, more personal, attributes which we often see in the students who attend the Language Lab. Many of our students tend to be naive and unsophisticated, rigid and literal in their thinking, uncommunicative and inarticulate. Politically conservative, they seldom question the status quo and are accepting of the conventional wisdom and established authority. Most Lab students are also logical, hard-working, conscientious, anxious to succeed, and receptive to instruction. These qualities make teaching writing skills to technically-oriented students both a challenge and a pleasure.

Students who are naive and unsophisticated and who do little reading tend to have very little knowledge of our culture and society. For example, one student who was writing about the problem of overcrowded prisons was examining the political aspects of the issue. During my discussion with her it became clear that she had no idea of the meaning of the terms "liberal," "conservative," "right-wing," or "left-wing." Needless to say, it was very

difficult for her to understand some of the source material she was reading for her paper. It was even more difficult for her to try to formulate any coherent explanation of how various political factions would react to the solutions she was proposing to the problem.

Another student who couldn't define "castrated" or "stallion" had trouble interpreting a poem which used the image of a gelding to symbolize powerlessness.

Students may also misinterpret the meanings of words because they have never seen them in written form. An example of this phenomenon occurred when a student was surprised to learn that the word "bastard" was not spelled "bass turd." Since the general meaning of the two terms could be interchanged in many usages, this student never questioned his interpretation until he saw the word in writing. A discussion of the newly learned definition of the word opened new areas of thought.

In order to help students with extremely limited vocabularies we have found it useful to go over reading material, lecture notes, and journal entries with them and to discuss terms, however simple, which may be open to misinterpretation. It is also useful to discuss current events with such students in order to assess general knowledge and to discover specific areas where information is lacking, incomplete, or incorrect. Spelling errors can also provide clues to vocabulary problems.

Many students in the Lab have difficulties with personal writing of any kind. They are usually very reluctant to offer an opinion on any topic, are afraid to use the word "I', "you", "we", etc., and can't describe their own or others' emotions. These students can be helped by discussing personal topics such as what their families and friends are like, what they remember about childhood experiences, and how they feel about controversial issues. The

tutor or teacher should be sure to contribute to such conversations so that the student doesn't feel as though he or she is being "grilled."

Having students close their eyes and make a verbal list of physical and sensory details of remembered childhood scenes while the teacher or tutor takes notes can sometimes help to stimulate more personal writing. It may also help if the tutor or teacher reads aloud short personal passages from a novel, story, or poem to show that personal experience is a valid basis upon which to base important insights.

Technically-oriented students with rigid, conservative personalities tend to accept things as they are and see little reason to question authority or to speculate about social issues. They often have difficulty thinking of anything to write about and when they finally do develop a thesis, they find it hard to provide examples to support and illustrate their ideas, and to expand and develop their papers.

Many students with these problems are stimulated to greater creativity by relating their writing tasks to topics of interest to them such as the popular media, family, the job market, and sports. The movie Ordinary People, for example was shown to some English classes at MTU in the spring of 1983, and prompted many fruitful discussions about family relationships. Many successful and interesting papers resulted.

Students who are extremely literal have problems interpreting literature and very rarely use any kind of symbolism in their writing. Even assignments are sometimes interpreted too literally by such students. In one case an instructor had told a class that a good technique to help avoid wordiness is to limit prepositional phrases. When someone asked what prepositions are, the teacher gave "for" as an example. One of the students from that class appeared at his next Lab session stubbornly determined to banish every "for"

from his paper. I was unable to convince him of his folly until his paper was returned with "short, choppy sentences!" as the primary criticism.

It is extremely difficult to help students overcome the tendency to be too literal. The only remedy we can suggest is to explore the various ways a statement can be interpreted and to closely question students when they report something which sounds unreasonable.

While the problems of some students in our Lab seem to be overwhelming at times, we find that because they are, on the whole, hard-working, anxious to succeed, and conscientious, they make steady and measurable progress. We hope that by describing some of our Lab students, we can help others to reach a better understanding of the personalities, motivations, and writing problems of other technically-oriented students. We also hope that some of the techniques described will be useful to those who are trying to help them with their problems.

In conclusion, I would like to emphasize that while the personality traits and writing problems discussed in this paper are seen in our students and other technically-oriented people, they are not necessarily characteristic of all such people. Somewhere, I am sure, there is an out-going, sophisticated, articulate, tolerant, flexible, radical technically-oriented student who is a marvelous writer. We just haven't yet had the pleasure of meeting her.

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